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REMARKS

Double Patenting

Claims 1-65 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-18, 20-41, 43-50, and 53-54, and 56-58 of copending Application No. 10/644,749.

Applicant will file a Terminal Disclaimer to Obviate a Provisional Double Patenting Rejection Over a Pending "Reference" Application, namely, 10/644,749. Please note that the 10/644,749 application is commonly owned with the present application.

Claims Rejections – 35 USC § 102

1. Claims 1-3, 20, 25, 32, 41 were rejected under 35 U.S.C. 102(b) as being anticipated by Shikata (4,543,019). Such rejection is traversed for the reasons now following.

The Shikata patent is directed towards a boring tool (i.e., a drilling means) and not concentric drill string having a directional drilling means attached thereto or a method of using concentric drill string having a directional drilling means attached thereto to drill a directional or horizontal wellbore. It is respectfully submitted that Shikata teaches a boring tool 1 that comprises a hollow boring bar 2 and an outer tube 3 (see, in particular, column 2, lines 54-58) and not concentric drill string consisting essentially of an inner pipe (2) and an outer pipe (3), as suggested by the Examiner. There is no mention of any drill string in the Shikata patent, i.e., whether the drilling tool is to be used with single wall drill string or concentric drill string.

Furthermore, there is no teaching in Shikata that the boring tool 1 is useful in directional or horizontal drilling. There is nothing to suggest that boring tool is a directional drilling means, i.e., that is can be used to drill other than in a straight line. For example, there is no mention of a bent housing or bend sub, which would allow for directional drilling.

Even if Fig. 2 and 3 did teach a concentric drill string (which they do not), such drill string would not consist essentially of an inner pipe and an outer pipe. Figure 2 of Shikata shows an auger or screw 12, which is necessary for the removal of cutting chips and fluid. Shikata states at column 3, lines 5-9, "...the cutting fluid carrying chips is forcefully drawn off through

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the hollow boring bar 2 in the direction of indicated arrows **B** by the inner rightward twisted screw 12" [emphasis added]. Similarly, Fig. 3 shows an auger or screw 14, and Shikata states at column 3, lines 30-35, "...cutting fluid which has cooled and lubricated the cutting tips 5 and now carries chips is forcefully sent backward by the rightward twisted screw 14 of the hollow boring head 4 in the direction of indicated arrows **B**, and then drawn off through the hollow boring bar 2. Thus, if Fig. 2 and 3 each illustrates concentric drill string (which they do not), the concentric drill string does not consist essentially of an inner pipe and an outer pipe. It is clear from the drawings and the specification that screw 12 and screw 14 are essential for removing cutting.

In summary, it is submitted that Shikata does not teach (1) a concentric drill string consisting essentially of an inner pipe and an outer pipe or (2) a bottomhole assembly connected to said concentric drill string comprising a directional drilling means. In summary, claims 1-3, 20, 25, 32, 41 are clearly patentably distinguishable over Shikata. Favorable reconsideration of claims 1-3, 20, 25, 32, 41 is respectfully requested.

2. Claims 1-2, 4-6, 12, 14, 15, 18, 22, 24, 25, 27, 33, 34, 36, 37, 43, 44, 50, 52 and 61 were rejected under 35 U.S.C. 102(b) as being anticipated by Lee (1,850,403). Such rejection is traversed for the reasons now following.

It is respectfully submitted that Lee does not teach a concentric drill string [consisting essentially of an inner pipe (1) and an outer pipe (46)] as suggested by the Examiner. The Lee invention "...relates to the operating end or drilling end of the drill stem [2] and the power element is supplied to the drill mechanism through a flexible pipe [1]" [emphasis added]. It is clear from Fig. 4 and Fig. 34 that the drill stem 2 is a single wall drill string.

Lee goes on to state at page 2, lines 51-59, that the power element, which operates the drill mechanism, "may be air, gas or other suitable element that is forced through the drill stem 2 to the flexible tube 1...Fig. 4 shows the upper extent of the flexible tube [1] where it registers with the drill stem 2" [emphasis added]. When one looks at Fig. 4, it can clearly be seen that the top of flexible tube 1 ends at drill stem 2. It can also be seen from Fig. 4 that below drill stem 2 is the operating end or drilling end referred to above. Thus, flexible tube 1 is not an inner pipe of a concentric drill string.

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The Lee patent goes on to say "...drill stem 2 will extend down from the top of the well to the flexing units A...a joint 3 is interposed between the drill stem tubing 2 and the first flexing joint A" (see page 2, lines 60-63). Thus, as seen in Fig. 4, the single walled drill stem 2 and the drilling means (flexing units A) are attached together by joint 3. Therefore, Lee does not teach providing a concentric drill string and connecting a bottomhole assembly (directional drilling means) to concentric drill string, rather it teaches providing a single wall drill string/stem and connecting a directional drilling means thereto.

Hence, Fig. 1 and, more particularly, Fig. 2, which the Examiner refers to as showing a concentric drill string, in fact, only illustrate the drilling means, *i.e.*, portions of the flexing units A, which is attached to the end of the single wall drill stem 2. Thus, reference numeral 46 is actually part of the flexing units A (*i.e.*, part of the directional drilling tool) and not part of the drilling string (drill stem 2). This is best described on page 4, lines 7-10, wherein it states "[t]he units A are provided with an outer shell 44, a center element 45, and an inner tube 46 all of which are pinned together" [emphasis added].

It is respectfully submitted that reference numeral 73 is not the directional drilling means *per se* (as 73 could not itself flex or direct) but rather forms part of the drill bit of a directional drilling means comprising flexing units A. This is shown more clearly at page 4, lines 108-111, wherein it states "...drill bit head 72 is provided with an enlarged portion 73 at the base thereof to form a retainer for a series of collapsible cutting blades 74, as shown in Fig. 3".

It is further submitted that page 2, lines 51-59 does not teach concentric drill string, nor does it teach delivering drilling medium through one of said annulus or inner pipe of said concentric drill string to the directional drilling means and extracting through the other. As stated above, and as clearly shown in Figure 4, flexible tubing 1 ends at the connection point of drill stem 2. Thus, drilling medium (power element) goes down single wall drill stem 2 and then through flexible tubing 1. While the exhaust power element (drilling fluid) does go through an annulus formed between the flexible tubing 1 and inner tube 45 of the drilling tool, the exhaust power fluid is then released through the perforations 5 of joint 3. This is described on page 2, line 60-69, wherein it states, "...joint 3 is provided with perforations 5 for the escape of the exhaust power element from the drill bit motor and other working parts".

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The Examiner states that page 6, lines 52-55 discloses, "the drilling means is delivered through the inner pipe and the exhaust drilling medium is extracted through annulus". With respect, page 6, lines 52-55, discloses a flushing mechanism for flushing the cuttings from the hole, which is provided in one of the flexing units, preferably, in the second unit above the drill bit unit. This flushing mechanism forms part of the drilling tool and Lee states on page 6, lines 57-59, "[t]he flushing mechanism is a valve which is operated by the pressure of the power element".

The flushing mechanism operates separately from the drilling operation. This can be seen more clearly at page 6, lines 99-109 wherein it states "[w]hen a greater amount of pressure is sent through the tube 1 the tension of the spring 118 will be overcome...thus shutting off the power element to the drilling mechanism" [emphasis added]. However, Lee fails to teach where the drill cuttings go. Lee simply states at page 6, lines 119-122 that "[t]his allows the power element to be used for forcing out the drill cuttings from the angular chamber and vertical hole".

In summary, it is respectfully submitted that page 6, lines 52-55, does not disclose a concentric drill string consisting essentially of an inner pipe and an outer pipe or delivering drilling medium through the inner pipe and the exhaust drilling medium is extracted through annulus.

Finally, element 35 is a ball joints allowing the drilling tool to flex and is not an interchange means as disclosed in the present application. Lee states at page 3, lines 104-108, "[e]ach of the flexing units A are provided with ball joints 35 so as to give the necessary turn to the units as they are deflected in their downward movement through the opening 11 of the housing 6".

In summary, it is submitted that Lee does not teach an apparatus or method of drilling a directional or horizontal wellbore comprising providing a concentric drill string consisting essentially of or comprising an inner pipe and an outer pipe. In summary, claims 1-2, 4-6, 12, 14, 15, 18, 22, 24, 25, 27, 33, 34, 36, 37, 43, 44, 50, 52 and 61 are clearly patentably distinguishable over Lee. Favorable reconsideration of claims 1-2, 4-6, 12, 14, 15, 18, 22, 24, 25, 27, 33, 34, 36, 37, 43, 44, 50, 52 and 61 is respectfully requested.

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3. Claims 1, 2, 13, 19, 25, 35, 40, 53 and 63 were rejected under 35 U.S.C. 102(b) as being anticipated by Cherrington (4,043,136). Such rejection is traversed for the reasons now following.

It is respectfully submitted that Cherrington does not disclose a bottomhole assembly comprising a reverse circulation directional drilling means (36) as stated by the Examiner. The Cherrington invention provides a system and method for emplacing a relatively large casing along the path of an existing pilot string. As stated at column 4, lines 15-18, "...a pilot hole 20 is initially drilled along the chosen inverted underground arcuate path from the first position 12 on one side of river 14 to a second position 16 at the other side" [emphasis added]. Cherrington goes on to say "[s]uch techniques are demonstrated in my U.S. Pat. No. 3,878,903...[and] pilot hole is drilled using a drill bit having a trailing drill string which occupies the hole from one end to another after the pilot hole has been completed" [emphasis added].

Looking at U.S. Pat. No. 3,878,903, and, in particular, FIG. 3 and 5, one can see that in order to initially drill the arcuate path, a drill head is used to power the drill, wherein the drill head is of the type which has an angular bend so that the drill bit is angularly inclined. Thus, the arcuate path is initially drilled with single wall drill pipe and a directional drilling means as disclosed in the '903 Patent.

The '136 Patent, however, teaches emplacing casing once the arcuate wellbore has already been drilled. Therefore, the Cherrington patent simply teaches reaming out an existing wellbore so that casing can be laid therein. Thus, there is no requirement for a directional drilling means in this reaming system and method, nor does Cherrington disclose a directional drilling means. This is clear from looking at FIG. 2. Element number 36 is reaming apparatus having a plurality of flipout teeth 38, which is mounted directly to washover pipe 28 along the circumference (see column 4, lines 51-53). There is no bent sub or housing, which would allow for directional drilling.

In summary, Cherrington does not teach a directional drilling means used with concentric drill string. Thus, claims 1, 2, 13, 19, 25, 35, 40, 53 and 63 are clearly patentably distinguishable over Cherrington. Favorable reconsideration of claims 1, 2, 13, 19, 25, 35, 40, 53 and 63 is respectfully requested.

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With respect to claims 1, 2, 13, 19, 25, 35 and 40, Cherrington does not teach a concentric drill string consisting essentially of an inner pipe and an outer pipe. It is clear from FIG. 2 that washover casing 28 further comprises auger flight 54 which "...impels the drilling mud containing the entrained cuttings 48 from reaming apparatus 36 from the leading end of production casing 10 towards the trailing end". Cherrington further states that "[a]dditional auger flights such as 58 may be mounted to washover casing 28 following auger flight 54 to further impel the drilling mud and the entrained tailings rearwardly, as illustrated by arrow 60". Also, under the heading Operation, it is clear from column 6, lines 33-36, that "[a]uger 54 on rotating washover pipe 28 impells [sic] the drilling mud containing the entrained cuttings from the leading end of the production tubing towards the trailing end thereof".

In summary, Cherrington does not teach a concentric drill string consisting essentially of an inner pipe and an outer pipe. Thus, claims 1, 2, 13, 19, 25, 35 and 40 are clearly patentably distinguishable over Cherrington. Favorable reconsideration of claims 1, 2, 13, 19, 25, 35 and 40 is respectfully requested.

Claim Rejections – 35 U.S.C. 103

Claims 22 and 43 were rejected under 35 U.S.C. 103(a) as being unpatentable over Lee ('403) in view of Sinclair ('515). Such rejection is traversed for the reasons now following.

Claim 22 is dependant on method claim 1 and 2 and claim 43 is dependent on apparatus claim 25. As stated above, Lee does not teach a drilling method and apparatus which uses a concentric drill string consisting essentially of an inner and outer pipe but rather teaches a single wall drill stem 2. Thus, modifying Lee with the addition of a suction compressor as taught by Sinclair would not result in the invention as claimed in claims 22 and 43.

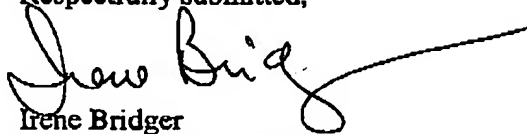
Favorable reconsideration of claims 22 and 43 is respectfully requested.

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In view of the arguments presented by Applicant herein, Applicant submits that claims 1 to 64 are in a condition for allowance and such allowance is respectfully requested.

Respectfully submitted,


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